REMARKS

Claims 1 and 16 have been amended to further clarify the invention. No new matter has been introduced. Claims 1-27 remain pending.

The Examiner has objected to claim 11 because of an informality. Such informality has been corrected in claim 11 (and claim 24).

The Examiner rejected claims 1-7, 9, 10, and 16-23 under 35 U.S.C. §102(e) as being anticipated by Dotan et al. (U.S. patent 6,407,386 B1). The Examiner has also rejected claims 8, 11-15, and 24-27 under 35 U.S.C. §103(a) as being unpatentable over Dotan. The Examiner's rejections are respectfully traversed as follows.

Claim 1 is directed towards a "method of classifying specimens based on X-ray data obtained from such specimens." Claim 1 also recites "providing a plurality of differing X-ray data from a plurality of known specimens having differing known characteristics, wherein the differing known characteristics correspond to all of the specimens having the same known defect surrounded by differing known background structures." Claim 1 also recites "setting up a pattern recognition process to automatically classify the differing known characteristics of the known specimens into a same first class based on the differing X-ray data from the known specimens" and "providing X-ray data from an unknown specimen having an unknown characteristic of an unknown class." Claim 1 further recites "utilizing the pattern recognition process to automatically classify the unknown characteristic of the unknown specimen as belonging to the first class based on the X-ray data from the unknown specimen." Claim 16 is directed towards an apparatus that includes mechanisms for performing the operations of claim 1.
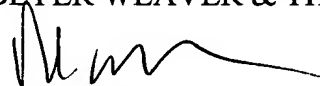
Embodiments of the present invention include setting up (or mechanisms for setting up) a pattern recognition process that can automatically classify a plurality of differing X-ray data into a single class. This pattern recognition process is then used to classify particular sets of differing spectra into a same class (or mechanisms are provided for using such process). This type of pattern recognition process would allow a particular defect type to be recognized even though it resides with differing background structures (e.g., different substrate material, different feature configurations and materials, etc.). Conventionally, a class for a particular X-ray data was determined by subtracting a known background X-ray spectra, e.g., for a silicon substrate. Classifying different types of defects would require subtracting different types of substrates or background from the measured X-ray data to determine a particular defect type. With so many types of possible structures that could reside in the vicinity of a defect, this manual classification process would require subtraction of a significant number of different types of X-ray data backgrounds and would likely be impossible.

The cited reference Dotan is directed towards a conventional system for classifying defects. Dotan teaches obtaining defect X-ray data taken from a unknown defect area and then subtracting background X-ray data from the obtained defect X-ray. The resulting X-ray data is then compared to a defect X-ray library using a particular comparison process such as least squares, to then obtain a best fit. The best fit is deemed to be the defect type. See Fig. 5 and Col. 7, Line 55 through Col. 8, Line 26. Specifically, Col. 7, Lines 18-19 teaches that the "comparison can be based on the least square method or any other algorithm." Since the background data is first subtracted from the X-ray data prior to comparing the measured X-ray data to a library, the pattern recognition is necessary <u>not</u> based on differing background characteristics resulting in a same class code, in the manner claimed. Accordingly, it is respectfully submitted that Dotan fails to teach or suggest mechanisms for "setting up a pattern recognition process to automatically classify the <u>differing</u> known characteristics of the known specimens into a <u>same first class</u> based on the <u>differing</u> X-ray data from the known specimens" and using such automatic pattern recognition process" where the differing known characteristics correspond to a <u>same known defect</u> surrounded by <u>differing known background structures</u>, in the manner claimed. Accordingly, claims 1 and 16 are patentable over the cited reference.

The Examiner's rejections of the dependent claims are also respectfully traversed. However, to expedite prosecution, all of these claims will not be argued separately. Claims 2-15 and 17-27 each depend directly or indirectly from independent claims 1 or 16 and, therefore, are respectfully submitted to be patentable over cited art for at least the reasons set forth above with respect to claims 1 or 16. Further, the dependent claims require additional elements that when considered in context of the claimed inventions further patentably distinguish the invention from the cited art. The cited references fail to teach or suggest such limitations.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP

Mary R. Olynick
Reg. 42,963

P.O. Box 70250
Oakland, CA 94612-0250
(510) 663-1100